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Assessment of the Morphological, Phenological, and Yield Characterization of Watermelon (*Citrullus lanatus* L.) Under the Influence of Spiritual Blessing/Biofield Energy Treatment (SBET)

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ABSTRACT

Background: Sustainable agricultural strategies increasingly explore non-chemical biostimulatory practices to enhance crop yield potential. Spiritual Blessing/Biofield Energy Treatment (SBET) represents an emerging non-invasive biostimulatory approach evaluated for its potential influence on biological systems. However, systematic scientific characterization of SBET on horticultural crops like watermelon (*Citrullus lanatus* L.) remains limited. **Objective:** This study was aimed to evaluate the impact of SBET on the morphological progression, phenological milestones, and yields of *C. lanatus* under standard field conditions. **Methods:** A randomized complete block design (RCBD) with three replications was established, comprising two primary groups: Control watermelon seeds and land) and SBET-treated (seeds and growing area subjected to biofield energy treatment by a recognized practitioner prior to sowing). Morphological, phenological parameters, yield and quality metrics were quantified at harvest. **Results:** Morphologically, the treatment watermelon plants exhibited a notable increased in vine length (44.02%, $p = 0.037$), internode length (58.68%, $p \leq 0.001$), primary branch count (50%, $p = 0.012$), stem diameter (40.97%, $p \leq 0.001$), leaf count (32.85%, $p \leq 0.001$), and leaf width (35.45%, $p \leq 0.001$) compared to the control watermelon plant. Yield parameters such as fruit length (33.17%, $p = 0.021$), seed count per fruit (40.58%, $p = 0.005$), and 100-seed weight (37.47%, $p \leq 0.001$) were also significantly increased in the treatment group than control. Overall, these improvements led to 28.81% expansion in total fruit yield per hectare in the treatment group than control. **Conclusion:** The findings suggest that Spiritual Blessing/Biofield Energy Treatment (SBET) acts as an effective non-material biostimulant capable of positively modulating vegetative vigor, shortening developmental cycles, and enhancing both quantitative yield and fruit quality parameters in *C. lanatus*.

Keywords: watermelon; crop yield; spiritual blessing; *Citrullus lanatus*; biofield energy treatment; non-invasive biostimulant

INTRODUCTION

Watermelon (*Citrullus lanatus* L.) is an economically vital horticultural crop cultivated across tropical and temperate regions for its rich nutrient profile and economic value. Systematic characterization of morphological traits such as vine length, stem diameter, leaf numbers, and fruit dimensions alongside critical phenological milestones was fundamental to evaluating crop vigor and developmental potential [1]. Furthermore, phenological timing, particularly early flowering and developmental plasticity, serves as a key physiological mechanism governing yield stability and environmental adaptation [2]. Optimizing fruit yield and quality parameters in *Citrullus lanatus* requires effective agronomic management to enhance vegetative performance and successful fruit set (Haq & Ahmed, 2023) [3]. Agronomic interventions and environmental management directly influence major fruit yield attributes, including fruit circumference, individual fruit weight, seed count, and total harvest output per unit area [4].

Consequently, modern horticultural research seeks non-invasive and sustainable biostimulatory methods capable of promoting vegetative vigor and overall crop productivity without ecological degradation.

In recent years, alternative physical biostimulation modalities, such as biofield energy treatment and spiritual

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blessing interventions, have gained attention in agricultural science [5]. Biofield energy treatment (SBET) has been reported to modulate soil fertility, microbial dynamics, and vegetative growth parameters across agricultural crops [6]. However, a comprehensive evaluation of Spiritual Blessing/Biofield Energy Treatment (SBET) on the specific morphological progression, phenological milestones, and yield characterization of *Citrullus lanatus* remains systematically under-explored. Therefore, this study was designed to characterize the morphological development, phenological performance, and yield efficiency of watermelon subjected to Spiritual Blessing/Biofield Energy Treatment under field conditions.

MATERIALS AND METHODS

Study site

Field evaluation took place in Bhandarwadi, Sindhudurg, Maharashtra, India (15°37′–16°40′ N, 73°19′–74°13′ E, 26 m above the mean sea level). Climatic conditions feature peak temperatures of 39 °C during late spring (April–May) contrasting with cooler winters (8–25 °C, December–February). Unpredictable rainfall distribution regularly triggers transient soil moisture stress during active crop growth.

Seed source and experimental design

Hybrid watermelon seeds (*Citrullus lanatus* L., 95% purity, Lot No. 19558699, Syngenta India Pvt. Ltd.) were evaluated using a randomized complete block design (RCBD) with three biological replicates. The study evaluated two treatment groups: an untreated/control watermelon group (CONWAMG) and a biofield energy-treated watermelon cohort (BTWAMG). All experimental units were maintained under standardized agronomic conditions including uniform irrigation, fertilizers application, and crop protection protocols to minimize environmental variance.

Plot design

Treatments were arranged in a RCBD (three replicates). Experimental plots (22.0 m²; 5.5 m × 4.0 m) were separated by 0.5-m buffers, with plant spacing strictly maintained at 0.5 m × 0.5 m. Pre-sowing basal fertilization (50 kg N ha^{-1}, 100 kg P ha^{-1}, and 50 kg K ha^{-1}) was directly incorporated into the upper soil horizon.

Spiritual blessing (biofield/prayer) energy treatment (SBET) strategy

The experimental group (watermelon seeds and designated crop land soil) received a single 4-minute session of distant biofield energy treatment from a spiritual practitioner with over 14 years of experience (Ms. Alice Branton, Florida, USA) *via* a real-time web-conferencing platform under controlled ambient conditions (28 ± 2 °C and 65 ± 5% relative humidity). The control group (identical seeds and soil) received no treatment and was maintained under equivalent environmental conditions.

Soil characterization and sample preparation

The experimental site was characterized by a well-drained, brownish-red loam with low baseline fertility. Prior to trial establishment, composite topsoil samples (30 cm depth) were air-dried and sieved through a 2-mm mesh for baseline characterization. Soil particle size distribution was determined according to Richer-de-Forges et al. [7], and soil pH was measured potentiometrically in a 1:2 (w/v) soil-to-deionized water suspension using a calibrated pH meter.

Agronomic management and plant protection

To facilitate crop establishment, direct-seeded plots were hand-watered for the first 8 days post-sowing before transitioning to a surface drip irrigation system (pressure-compensating emitters at 0.5 m spacing; 3.0 L h^{-1} flow rate). Before sowing during soil preparation, basal fertilizers were applied uniformly across all the plots at the proportion of 50–100–50 kg ha^{-1} (N–P–K), providing full requirements of P (single superphosphate) and K (muriate of potash) along with 50% of N (urea). The remaining N fraction was top-dressed at 21 days after sowing (DAS). Insect pest management was standardized across all treatments *via* a foliar spray of Hamla 550 (Gharda Chemicals Ltd., India) was applied at 2.0 mL L^{-1}.

Growth and morphological parameters

To evaluate morpho-agronomic and yield dynamics, five plants per plot were randomly sampled. At 90 DAS, vegetative parameters comprising vine length (m), primary branch count, internode length (cm), stem diameter (cm), leaf count, and leaf dimensions (cm) were recorded alongside qualitative leaf morphology (blade shape, coloration, margin type, and pubescence). At harvest, fruit morphological and quality traits were evaluated, including qualitative attributes (fruit shape, skin, and flesh color) and quantitative attributes: fruit dimensions (length and diameter, cm), flesh thickness (cm), rind thickness (mm), individual fruit mass (kg), and fruit yield per plant and total yield (t ha^{-1}). Seed morphometry was subsequently characterized by measuring seed dimensions (length, width, and thickness, cm), seed count per fruit, and 100-seed mass (g).

Yield parameters

Yield evaluation was conducted on five randomly selected representative plants per plot. Watermelon (*C. lanatus*) fruits were harvested upon reaching physiological maturity. Morphometric dimensions including polar length and equatorial diameter (cm) were measured and individual fruit mass (kg) was determined using a calibrated digital balance. Cumulative fruit yield per plot was subsequently converted to yield per hectare (t ha^{-1}).

Statistical analysis

Continuous variables were expressed as mean ± standard error of the mean (SEM). Comparisons between two independent cohorts were performed using a two-tailed, unpaired Student's *t*-test. Statistical significance was defined as $p < 0.05$. All analyses were conducted using SigmaPlot (version 14.0).

RESULTS

Soil properties

Blessing/Biofield energy-treated watermelon (BTWAMG) significantly improved both the physical and chemical properties of the sandy loam soil matrix compared to CONWAMG, as evidenced by enhanced water-holding capacity and elevated levels of exchangeable cations such as Ca^{2+}, Mg^{2+}, and Na^{+} (data not shown).

Phenological progression and morphology of watermelon

Morpho-physiological and yield-related parameters of *Citrullus lanatus* were tracked sequentially at five benchmark phenological stages: seedling, vegetative growth, floral phase, fruit growth, and harvest (**Figure 1**).

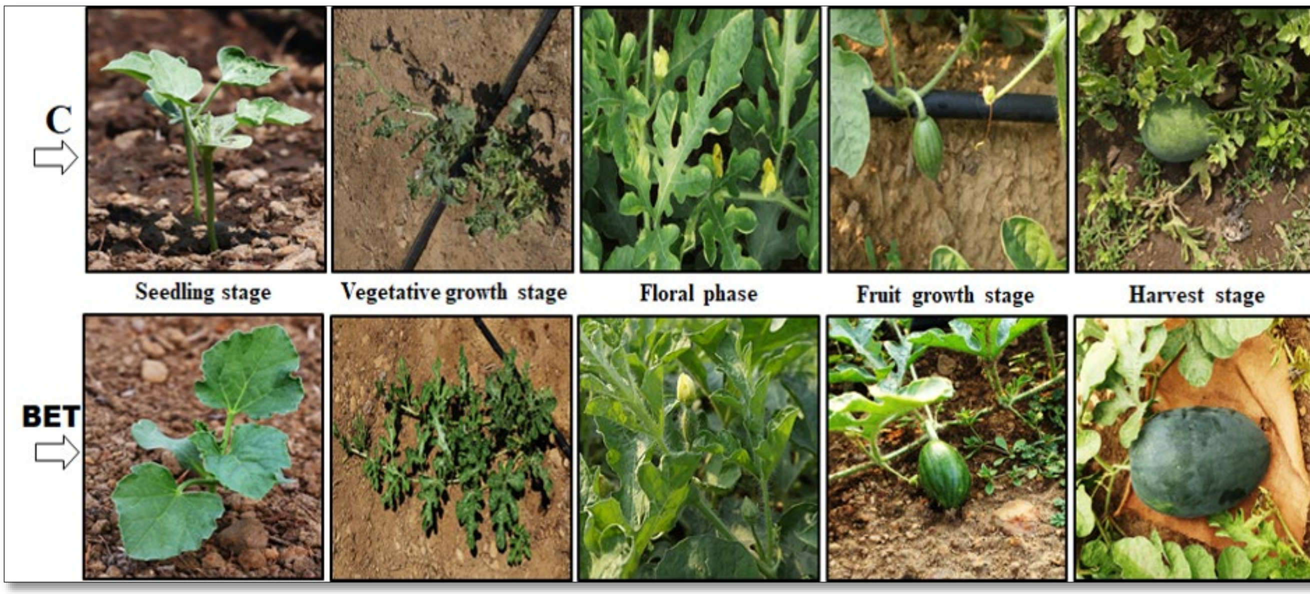

Figure 1. Vegetative growth dynamics in watermelon (*Citrullus lanatus* L.). Representative chronological photographs illustrating developmental transitions in control (C) versus biofield energy-treated (BET) cohorts.

Morphological characteristics

Distinct phenotypic variations were observed between the control (CONWAMG) and blessing/biofield energy-treated (BTWAMG) groups across several key vegetative and reproductive descriptors (**Table 1**). Compared to the control, BTWAMG plants exhibited enhanced vegetative vigor, characterized by increased vine length, greater primary branch frequency, thicker stem diameter, larger leaves, denser foliar pubescence, and darker green blade pigmentation. Fruit and seed morphology were similarly altered: BTWAMG fruits developed dark green epicarps with sparse rind striping, bright red flesh, and dark brown seeds, whereas CONWAMG fruits displayed medium green epicarps with standard striping, red flesh, and brown seeds. Both groups consistently produced wavy leaf blade margins and oval fruit morphology at maturity (**Table 1**). Overall, these observations demonstrate a pronounced qualitative enhancement in both vegetative canopy architecture and reproductive traits following biofield energy treatment.

Phenology and yield traits

Relative to CONWAMG, BTWAMG significantly increased germination rate by 14.85% ($p \leq 0.001$) and enhanced vegetative growth, improving vine length (44.02%, $p = 0.037$), internode length (58.68%, $p \leq 0.001$), primary branch count (50%, $p = 0.012$), and stem diameter (40.97%, $p \leq 0.001$). Leaf morphology also showed marked improvement in leaf count (32.85%, $p \leq 0.001$), leaf length (11.16%, $p \leq 0.001$), and leaf width (35.45%, $p \leq 0.001$). Phenologically, BTWAMG took less time to 50% flowering by 6.62% ($p \leq 0.001$); while boosting of female flower counts (20.23%, $p = 0.002$) compared to the CONWAMG. Yield parameters responded positively, with increases in fruit length (33.17%, $p = 0.021$) and fruit diameter (19.52%, $p \leq 0.001$) accompanied by 23.64% ($p \leq 0.001$) reduction in rind thickness. Furthermore, seed metrics followed a similar upward trend, with significant increases in seed count per fruit (40.58%, $p = 0.005$), seed length (25%, $p = 0.014$), and 100-seed weight (37.47%, $p \leq 0.001$) in the BTWAMG compared to the CONWAMG. Together, these improvements drove a

28.81% expansion in total fruit yield per hectare in the BTWAMG compared to the CONWAMG (**Table 2**).

Table 1. Effects of blessings (biofield) energy treatment on qualitative vegetative parameters of watermelon at 90 days after sowing (DAS).

Vegetative trait	Control group (CONWAMG)	Treated group (BTWAMG)
Vine length	Medium	Long
Number of primary branches per vine	Medium number	More
Stem diameter	Medium thick	Thicker
Leaf shape and size	Pentalobed, medium, and wide	Pentalobed, large, and wide
Leaf blade margin	Wavy	Wavy
Leaf hair	Moderate	Many
Leaf blade colour	Green	Dark green
Fruit skin colour with stripes type	Medium green with rind stripes	Dark green with a few stripe
Fruit shape (at maturity stage)	Oval	Oval
Fruit inside colour	Red	Bright red
Seed colour (at the mature harvest stage)	Brown	Dark brown

DISCUSSION

The phenotypic variations observed between BTWAMG and control (CONWAMG) plants highlight a clear physiological and morphological shift across both vegetative and reproductive tissues. The substantial enhancement of vegetative vigor observed in BTWAMG plants characterized by increased vine length, higher primary branch frequency, thicker stem diameter, and larger leaf surface area, demonstrates optimized vegetative growth and resource partitioning due to the effects of SBET (**Table 1**). Similar growth enhancements in watermelon have been documented by Luo et al. 2026 [8]. This pronounced enhancement in overall plant architecture aligns with the core principles established by Selim et al. 2026 and demonstrated that beneficial microbial interactions and biological treatments stimulate systemic growth pathways, promote cell division in apical meristems, and facilitate macro- and micronutrient uptake across crop species [9]. In this study, BTWAMG plants improved denser foliar pubescence and darker green blade pigmentation. Also increased trichome density which served as an adaptive structural mechanism in cucurbits to modulate microclimate, reduce transpiration loss, and confer protection against biotic stress. Besides, darker green pigmentation correlates with elevated chlorophyll densities and enhanced photosynthetic efficiency [10].

Here, the transition from medium green epicarps (fruit skin colour) with standard rind striping in CONWAMG to dark green epicarps with sparse rind striping in BTWAMG indicates substantial modulation of epidermal pigment synthesis and rind pattern development. The genetic regulation and phenotypic expression of background skin color and stripe intensity in watermelon were reported by Gusmini et al. 2006 [11]. Furthermore, the shift from standard red flesh in CONWAMG to bright red flesh in BTWAMG points toward heightened secondary metabolite synthesis, particularly carotenoid accumulation. Bright red flesh coloration in mature watermelon fruit was governed by lycopene accumulation and chromoplast differentiation, a metabolic process systematically evaluated by Yu et al. 2022 [12]. Moreover, the darker brown seed coat was observed in BTWAMG seeds compared to the brown seeds of CONWAMG, suggests an accelerated physiological maturity and increased phytomelanin or polyphenol deposition in the seed testa. These seed coat pigmentation mechanisms in watermelon were detailed by Mavi, 2010 [13]. The significant acceleration in germination rate was observed in the BTWAMG highlights enhanced seed metabolic reactivation and seedling vigor, establishing a robust foundation for early crop establishment. This early developmental momentum translated directly into augmented vegetative architecture, evidenced by substantial improvements in vine length, internode length, primary branch count, and stem diameter. These structural enhancements were supported by foundational findings on watermelon seed metabolism and vigor dynamics [14].

Table 2. Evaluation of the phenological and yield characteristics of watermelon following spiritual (biofield/prayer) blessing energy treatment (SBET).

Vegetative trait	Control group (CONWAMG)	Treated group (BTWAMG)	P value
Days to germination	5 to 8	5 to 7	-
Germination percentage	85.36 ± 0.73	98.04 ± 0.25	$p \leq 0.001$
Vine length (m)	2.34 ± 0.35	3.37 ± 0.22	$p = 0.037$
Internode length (cm)	7.14 ± 0.28	11.33 ± 0.25	$p \leq 0.001$
Number of primary branches/plant	6.28 ± 0.89	9.42 ± 0.39	$p = 0.012$
Stem diameter (cm)	2.27 ± 0.04	3.20 ± 0.03	$p \leq 0.001$
Number of leaves	182.64 ± 7.98	242.63 ± 6.18	$p \leq 0.001$
Leaf length (cm)	16.58 ± 0.29	18.43 ± 0.67	$p \leq 0.001$
Leaf width (cm)	11.34 ± 0.47	15.36 ± 0.13	$p \leq 0.001$
Days to flowering	41.19 ± 0.27	39.66 ± 0.78	$p = 0.101$
Days to 50% flowering	60.31 ± 0.17	56.32 ± 0.47	$p \leq 0.001$
Number of male flowers	120.38 ± 4.38	127.35 ± 5.32	$p = 0.341$
Number of female flowers	13.64 ± 0.38	16.40 ± 0.45	$p = 0.002$
Days to fruit harvesting	84.87 ± 3.67	81.37 ± 1.42	$p = 0.400$
Average fruit weight (kg)	2.64 ± 0.51	3.85 ± 0.31	$p = 0.077$
Vegetation period (days)	119.35 ± 3.07	116.42 ± 2.78	$p = 0.499$
Fruit length (cm)	18.69 ± 1.51	24.89 ± 1.55	$p = 0.021$
Fruit diameter (cm)	17.06 ± 0.48	20.39 ± 0.26	$p \leq 0.001$
Fruit flesh thickness (cm)	2.47 ± 0.76	3.32 ± 0.04	$p = 0.296$
Rind thickness (mm)	9.01 ± 0.06	6.88 ± 0.07	$p \leq 0.001$
100-seed weight (gm)	4.35 ± 0.04	5.98 ± 0.04	$p \leq 0.001$
Seed length (cm)	0.76 ± 0.06	0.95 ± 0.01	$p = 0.014$
Seed width (cm)	0.51 ± 0.04	0.62 ± 0.02	$p = 0.039$
Seed thickness (cm)	0.36 ± 0.02	0.35 ± 0.02	$p = 0.733$
Seed count/fruit	99.84 ± 8.35	140.36 ± 6.27	$p = 0.005$
Number of fruits/plants	3.04 ± 0.15	3.40 ± 0.11	$p = 0.089$
Fruit yield (kg)/plant	7.73	13.1	-
Fruit yield (kg)/plot	67.15	86.48	-
Fruit yield/sq. m plot (kg/sq. m)	1.02	1.31	-
Fruit yield/hectare (tones/hectare)	10.17	13.10	-

Data represented as mean ± SEM (n = 5); p ≤ 0.05 vs. control watermelon group (CONWAMG) using Student's t-test

In addition to primary stem elongation, leaf canopy architecture exhibited marked structural expansion, characterized by notable increases in leaf count, leaf length, and leaf width. Enlargement of the total leaf surface area directly enhances photon interception and light-use efficiency, providing greater carbon assimilate capacity necessary to support demanding sinks during subsequent reproductive phases in watermelon crops [15]. The enhanced assimilate supply and superior floral establishment ultimately driven by BTWAMG resulted in major improvements to fruit physical characteristics, including increases in fruit length and fruit diameter. Remarkably, these dimensional expansions were accompanied by a reduction in rind thickness. A thinner rind coupled with enlarged fruit dimensions significantly enhances edible flesh yield and consumer preference metrics, corroborating physiological models of cell division and expansion during watermelon pericarp tissue development [16]. Consistent with fruit dimensional growth and seed morphometry displayed significant positive gains in the BTWAMG, including increases in seed count per fruit, seed length, and 100-seed weight. Enhanced seed mass and seed loading serve as crucial physiological indicators of strong endosperm sink capacity and efficient nutrient translocation during maturation, which collectively underpinned the overall expansion in total commercial fruit yield per hectare observed in BTWAMG compared to CONWAMG [10].

CONCLUSION

Based on the experimental results, the spiritual blessing energy treatment (The Trivedi Effect®) significantly enhances both the vegetative architecture and reproductive yield parameters of watermelon plants compared to untreated control. The treatment acts as a potent growth-promoting agronomic intervention. By simultaneously optimizing vegetative establishment, canopy expansion, and reproductive efficiency, the treatment achieved a significant expansion in fruit yield per hectare. Consequently, this treatment demonstrates strong commercially viable potential for maximizing overall crop productivity and agricultural efficiency in watermelon cultivation.

ABBREVIATIONS

SBET: spiritual blessing energy treatment; CONWAMG: control watermelon group; BTWAMG: biofield energy-treated watermelon group; SSP: single super phosphate; MOP: muriate of potash

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CONFLICT OF INTERESTS

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